

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A halogen dioxide generating system, comprising:
 - a) a source of an aqueous halogen dioxide feed solution, the source comprising means for ~~locally~~ delivering halogen dioxide salt directly to an aqueous feed solution inlet stream to locally form the aqueous halogen dioxide feed solution, ~~wherein the aqueous feed solution comprises from about 10 ppm to about 1000 ppm halogen dioxide salt~~;
 - b) a non-membrane electrolysis cell comprising an anode and a cathode, and having a cell chamber with an inlet for receiving said aqueous feed solution stream comprising said halogen dioxide salt and an outlet for discharging effluent comprising halogen dioxide;
 - c) a passage comprising the aqueous feed solution adjacent to the anode of said non-membrane electrolysis cell; and
 - d) an electric current supply configured to provide a current through the aqueous feed solution in the passage between the anode and the cathode wherein the system is structured to consume power at about one Watt or less.
2. (Original) The halogen dioxide generating system of claim 1 wherein the anode and the cathode are confronting and co-extensive, with a chamber gap of 0.5 mm or less.
3. (Original) The halogen dioxide generating system of claim 1 wherein the anode is a metallic porous anode.
4. (Original) The halogen dioxide generating system of claim 1, wherein said system is interfaced with an appliance.
5. (Original) The halogen dioxide generating system of claim 4, wherein said appliance is selected from the group consisting of refrigerators, water chillers, water fountains, soda

fountains, oral irrigators, water purifiers, water coolers, washing machines, dishwashing machines, coffee makers, faucets and combinations thereof.

6. (Original) The halogen dioxide generating system of claim 4, wherein said system is interfaced with said appliance via connection of a water inlet line to the inlet of said electrolysis cell and connection of an outlet line from the outlet of said electrolysis cell to an inlet of said appliance.

7. (Original) The halogen dioxide generating system of claim 4, wherein said system is interfaced with said appliance via connection of said electrolysis cell between an inlet of said appliance and an outlet of a water-dispensing device of said appliance.

8. (Original) The halogen dioxide generating system of claim 4, wherein said system is interfaced with said appliance via connection of said electrolysis cell between an inlet of said appliance and an outlet of an ice-dispensing device of said appliance.

9. (Currently amended) A halogen dioxide generating and re-circulating system, comprising:

a) a source of an aqueous halogen dioxide feed solution, the source comprising means for ~~locally~~ delivering halogen dioxide salt directly to an aqueous feed solution inlet stream to locally form the aqueous halogen dioxide feed solution;

b) a non-membrane electrolysis cell comprising an anode and a cathode, said anode and said cathode being separated by a non-conducting porous flow barrier, and said electrolysis cell having a cell chamber with an inlet for receiving said aqueous feed solution comprising halogen dioxide salt and an outlet for discharging effluent comprising halogen dioxide, wherein said anode comprises a plurality of porous flow passages through which at least a portion of the aqueous halogen dioxide feed solution flows in a cross direction to a flow of electricity between the anode and the cathode, and wherein said porous flow barrier is structured and arranged to restrict flow of the aqueous feed solution through the cell chamber in a cross direction to the flow

of electricity between the anode and cathode, thereby increasing a proportion of aqueous halogen dioxide feed solution that flows through the anode;

c) a passage formed through at least a portion of said porous anode and at least a portion of said non-conducting porous flow barrier;

d) an electric current supply configured to provide an electric current that flows between the anode and the cathode in a cross direction to the flow of the aqueous feed solution through the porous anode and the cell chamber wherein the system is structured to consume power at about one Watt or less, wherein the current converts a portion of the halogen dioxide salt in the passage to halogen dioxide, and thereby forms an aqueous effluent comprising halogen dioxide; and

e) at least one return passage configured for returning one or more of i) depleted effluent comprising reverted halogen dioxide salt and ii) at least a portion of the aqueous effluent from the cell chamber back to said aqueous feed solution inlet stream.

10. (Original) The halogen dioxide generating system of claim 9, wherein said system is interfaced with an appliance.

11. (Original) The halogen dioxide generating system of claim 10, wherein said appliance is selected from the group consisting of refrigerators, water chillers, water fountains, soda fountains, oral irrigators, water purifiers, water coolers, washing machines, dishwashing machines, coffee makers, faucets and combinations thereof.

12. (Original) The halogen dioxide generating system of claim 10, wherein said system is interfaced with said appliance via connection of a water inlet line to the inlet of said electrolysis cell and connection of an outlet line from the outlet of said electrolysis cell to an inlet of said appliance.

13. (Original) The halogen dioxide generating system of claim 10, wherein said system is interfaced with said appliance via connection of said electrolysis cell between an inlet of said

appliance and an outlet of a water-dispensing device of said appliance.

14. (Original) The halogen dioxide generating system of claim 10, wherein said system is interfaced with said appliance via connection of said electrolysis cell between an inlet of said appliance and an outlet of an ice-dispensing device of said appliance.

15. (Currently amended) An electrolysis device comprising:

at least one cell chamber with an inlet for receiving said halogen dioxide salt and an outlet;

at least one electrolytic cell with at least one anode and at least one cathode, wherein at least one pair of an anode and a cathode is separated by a non-conducting porous barrier, and wherein said at least one anode comprises a plurality of porous flow passages through which an aqueous halogen dioxide feed solution flows in a cross direction to a flow of electricity between the at least one anode and the at least one cathode, and wherein said porous flow barrier is structured and arranged to restrict flow of the aqueous feed solution through the at least one cell chamber in a cross direction to the flow of electricity between the anode and cathode, thereby increasing a proportion of aqueous halogen dioxide feed solution that flows through the anode;

a reservoir connected to said at least one electrolytic cell by a passage, said reservoir configured to ~~locally~~ automatically deliver halogen dioxide salt directly to the aqueous feed solution to locally form a halogen dioxide solution upstream from the inlet to the at least one cell chamber;

at least one pump connected to said reservoir and passage; and

at least one electric current supply connected to said at least one anode and said at least one cathode wherein the system is structured to consume power at about one Watt or less.

16. (Previously presented) The halogen dioxide generating system of claim 1, wherein the means for locally delivering halogen dioxide salt to an aqueous feed solution inlet stream comprise one or more of:

i) a reservoir comprising a concentrated halogen dioxide salt solution in fluid communication with the aqueous feed solution stream;

ii) a reservoir comprising a solid or powdered halogen dioxide salt, said reservoir configured to introduce halogen dioxide salt into the aqueous feed solution stream; or

iii) a halogen dioxide salt chamber comprising solid or powdered halogen dioxide salt, wherein at least a portion of the aqueous feed solution stream passes through said salt chamber wherein at least a portion of the halogen dioxide salt dissolves into the aqueous feed solution stream.

17. (Previously presented) The halogen dioxide generating and re-circulating system of claim 9, wherein the means for locally delivering halogen dioxide salt to an aqueous feed solution stream comprise one or more of:

i) a reservoir comprising a concentrated halogen dioxide salt solution in fluid communication with the aqueous feed solution stream;

ii) a reservoir comprising a solid or powdered halogen dioxide salt, said reservoir configured to introduce halogen dioxide salt into the aqueous feed solution stream; or

iii) a halogen dioxide salt chamber comprising solid or powdered halogen dioxide salt, wherein at least a portion of the aqueous feed solution stream passes through said salt chamber wherein at least a portion of the halogen dioxide salt dissolves into the aqueous feed solution stream.

18. (Previously presented) The halogen dioxide generating and re-circulating system of claim 9, wherein the porous barrier comprises one or more of:

i) a plurality of objects packed into the chamber between the anode and the cathode; or

ii) one or more baffles positioned between the anode and the cathode.

19. (Previously presented) The electrolysis device of claim 15, wherein the porous barrier comprises one or more of:

i) a plurality of objects packed into the chamber between the anode and the cathode; or

ii) one or more baffles positioned between the anode and the cathode.